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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,696	01/05/2001	Hiroshi Saeki	NEC 2020	4001

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EXAMINER

DONG, DALEI

ART UNIT

PAPER NUMBER

2875

DATE MAILED: 03/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/755,696

Applicant(s)

SAEKI, HIROSHI

Examiner

Dalei Dong

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/755,696.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because the abstract contains the word "comprising" thus should be replaced with the word "having". Correction is required.

See MPEP § 608.01(b).

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The disclosure is objected to because of the following informalities:

On page 8, line 22, gas introduce port should be 13a and not "31a".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,938,494 to Betsui in view of U.S. Patent No. 5,797,780 to Peng.

Regarding to claims 1-8, Betsui discloses in Figure 3, an apparatus for manufacturing a plasma display comprising "the front substrate 11, for which the steps up to the formation of the dielectric film 17 has been finished, is first put in a loading chamber 51 and then transferred into a protective film forming chamber 52. The pressure of oxygen inside the protective film forming chamber 52 is 1×10^{-4} Torr" (column 5, line 12-17).

Betsui also discloses in Figure 3, "continuously the front substrate 11 is transferred into a high-vacuum transfer chamber 53 and next transferred into a temporary protective film forming chamber 54. When SiN is used for the temporary protective film 19, for example, a SiN film is formed onto the surface of the protective film 18 using a SiN target 54a. The pressure of the gas inside the temporary protective film forming chamber 54 is 5×10^{-3} Torr. Then the front substrate 11 is transferred into an unloading chamber 55 and taken out. All three of the different chambers mentioned above are connected to an appropriate vacuum source 56, that meet the functional needs of each chamber operation" (column 5, line 20-31).

Betsui further discloses in Figure 3, "the rear substrate 21 and the front substrate 11 thus formed are put together so that the address electrodes and the sustain electrodes crossingly face each other. With this state maintained, the substrates are heated so that the sealing medium 12 melts to stick the front substrate 11 to the rear substrate 21 together, thus the panel being assembled. At the same time, a exhaust tube (not shown)

for discharging the inside gas is fitted. The gas inside the panel is discharged through the exhaust tube" (column 5, line 50-59).

Betsui further yet discloses in Figure 3, "the gas inside the panel is taken out, a discharge gas for display containing Ne and Xe is fed and the tip tube is sealed" (column 6, line 9-11).

However, Betsui does not disclose the apparatus and the method of sealing the gas introduction/exhaust port. Peng teaches in Figure 4, "A hybrid sealing process will now be described by using a glass exhaust tube, 10, that is sealed to one end of a three-port stainless steel tube, 20, by a vacuum O-ring seal, 11. The branch tube, 12, of this three-port stainless steel connects to the pumping system, as shown in FIG. 4. The other end of this exhaust tube having a diameter approximately 7.0 to 13.0 mm larger than the exhaust aperture in the back flat glass is sealed to the back flat panel, 1b, around the aperture with de-vitrified glass frits, 5. The aperture opening is centered in the aperture end of the exhaust tube. The other end of the straight portion of the three-port stainless steel tube is hermetically sealed with a linear motion feed-through mechanism, 13, which moves and manipulates a stainless or glass plunger, 14. as shown in FIG. 4. The plunger consists of a shaft, 15, with one end attached to the linear motion driving mechanism, 13, and the other end attached to a holder, 16. A sealing plate substrate, 17, having a diameter in the range, which overlaps the aperture opening, 9, by approximately 2.5 to 3.5 mm. The glass plate, 17, is adhered to the vitreous glass frits, 18, by dispenser. The vitreous glass frits having thickness in the range of about 0.75 to 1.25 mm, 18, has a diameter slightly smaller than the glass plate substrate. The sealing plate/vitreous glass frits assembly is

then mounted onto the holder, 16, with only the glass plate, 17, held by of the plunger, i.e. the vitreous glass frits is at the front tip. It is important that the holder should only hold the sealing plate, and not in contact with the glass frits in order to minimize contamination. The sealing plate/vitreous glass frits assembly is driven toward the aperture and block the opening in the back flat panel after the pressure inside the panel box has reached a vacuum level of 5.times.10.sup.-7 torr or lower at a temperature between about 400 to 500 deg.C. in the oven, 21. The thickness of the glass frits has to be pre-determined to allow the devitrified glass frits not only completely fill the aperture opening,9, in the glass panel to form a sealed plug, but also with overflow of the glass frits on both ends of the plug, thereby allowing overflown glass frits to bond to the inside and outside surfaces of the back glass panel, 1b, surrounding the plug as shown in FIG. 5, i.e. in the shape of a spool when the temperature of the glass frits reaches the oven temperature" (column 3, line 63-67 to column 4, line 1-36).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have seal the introduction/exhaust port of Betsui using the hybrid sealing process and apparatus of Peng in order to achieving high vacuum after sealing without the use of high cost and low throughput vacuum oven or furnace and further eliminate contaminations within the plasma display.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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The following prior art are cited to further show the state of the art of method and apparatus for manufacturing a plasma display panel.

U.S. Patent No. 5,207,607 to Nagano.

U.S. Patent No. 5,813,893 to Robinson.

U.S. Patent No. 5,846,110 to Kanagu.

U.S. Patent No. 6,172,460 to Damen.

U.S. Patent No. 6,193,811 to Sundarrajan.

U.S. Patent No. 6,254,449 to Nakanishi.

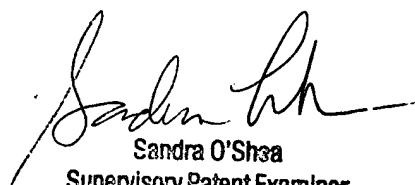
U.S. Patent No. 6,257,945 to Nakayama.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalei Dong whose telephone number is (703)308-2870. The examiner can normally be reached on 8 A.M. to 5 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (703)305-4939. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9318 for regular communications and (703)872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

D.D.
February 19, 2003


Sandra O'Shea
Supervisory Patent Examiner
Technology Center 2800